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ABSTRACT

Skills and competencies needed for success in a four-year college program are discussed, based on an assessment of the Nevada Joint Council on College Preparation. The Council advocates that high school students take a sound course of basic academic subjects to prepare for college. The minimum courses that are recommended are as follows: 4 years of English, 3 years of mathematics, 3 years of science, 4 years of social studies, 2 years of the same foreign language, 1 year of visual arts or performing arts, and computer education. For each subject area and subareas, information is provided on specific skills, competencies, and knowledge that students should acquire. In addition, general skills that are needed for college study are identified. Based on the recommendations of various national educational and professional associations, the following general abilities are outlined in detail: organizing, study, and research; reading; writing; speaking and listing; dealing with quantitative and spatial concepts; and reasoning and investigating. Finally, separate notes are provided to students, parents, local school districts, the state board of education, and the board of regents. (SW)

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Report of the Nevada Joint Council on College Preparation

The University of Nevada System
Board of Regents
and
The State Board of Education

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Making High School Count

Introduction

The Joint Council on College Preparation was formed by the State Board of Education and the University of Nevada Board of Regents to assure that Nevada students have a fair chance to succeed in higher education. The task of the Joint Council was to identify the skills and competencies that our young people need for success in a four-year college program.

The Joint Council has worked hard to produce a report that will be useful to students and their parents, and also teachers, counselors, administrators, university faculty, local school boards, the State Board of Education, and University of Nevada Board of Regents. It combines the best judgments of a wide variety of Nevadans, both in and out of education, gained from questionnaires, interviews, and student hearings.

The Joint Council recognizes that not every college will require all of the competencies, but by following the recommendations in this proposal, students will meet or exceed entrance requirements to most colleges or universities in this country.

We believe that improving the preparation of students for college is necessary to fulfill our national commitment of equal access to higher education. This report will help Nevada students to constructive and decisive steps to make their high school years count.

Janice Clarke
Nevada Board of Education

JoAnn Sheerin
University of Nevada
Board of Regents

The Report of
The Nevada Joint Council on College Preparation

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I.

Basic Academic Subjects

Preparing for college is a serious task which requires planning and hard work. The most systematic way to acquire the competencies needed for success in college is to take a sound course of basic academic subjects in high school. Some of these competencies can be attained in ways other than formal schooling, but careful selection of courses and sustained study before college are essential.

The recommended courses listed below reflect minimums only. Each subject area that follows describes in more detail specific skills, competencies, and knowledge that students should acquire.

- **Four years of English** with heavy emphasis on composition, rhetoric, and American, English, and world literature.
- **Three years of mathematics** including algebra and geometry. Four years of mathematics for majors in math and science related fields.
- **Three years of science** including biology, chemistry, and physics; at least two years should be in a laboratory science. Four years of science for majors in science or related fields.
- **Four years of social studies** including world history and geography, United States history, economics, government, and law.
- **Two years of the same foreign language.** Four years of foreign language for majors in foreign language, history, or literature.
- **One year of visual arts or performing arts.**
- **Computer education.**

English

College-bound students must be proficient in reading, writing, speaking, and listening. In high school these skills are acquired primarily through a rigorous four-year college preparatory English program.

Through the study of various types of literature, such as short stories, plays, poetry, and novels, students learn to read critically and analytically, to recognize assumptions and implications, and to evaluate ideas. They gain an awareness of other cultures and the ability to read with understanding; they become more imaginative and more active in responding to literature.

Through composition and rhetoric, students recognize writing as a process that involves many steps and learn to write appropriately for different occasions, audiences, and purposes. They learn to use writing as a means of clarifying their ideas, and to use, with skill and assurance, the conventions of written English.

Academic preparation should include:

Literature

- Basic familiarity with major works of American and world literature.
- Familiarity with major literary forms including the novel, short story, drama, biography, essay, and poem.

- Ability to recognize values and universal themes in literature and the relation of literature to the social conditions in which it was produced.
- Knowledge of trends in literary history including both oral and written traditions.
- Ability to recognize specific uses of language in literature including style, figurative language, tone, mood, point of view, symbols, imagery, and allusion.
- Familiarity with basic forms of literary response including interpretation, analysis and synthesis.

Composition

- Frequent and regular writing assignments of varying length and purpose that require the identification of ideas, drafting, revising, and editing to a final product. Assignments should require writing in standard English with control of the conventions of edited American English including sentence structure, grammar, punctuation, and spelling.
- Practice in writing for a variety of audiences using informative, persuasive, and critical styles.
- Ability to employ basic research techniques to gather information and to quote, paraphrase, and summarize from other sources with proper attribution.

Oral Communication

- Regular practice in classroom speaking, including prepared and spontaneous presentations and question-and-answer exchanges with listeners.
- Ability to recognize and use different rhetorical approaches such as informing, persuading, imagining, and socializing, and to select appropriate approaches for various situations.
- Ability to adapt message and form of address to different purposes, audiences, and contexts of the communication.
- Regular practice in listening to oral presentations, accurately identifying the speaker's essential points, and separating fact from opinion in the presentation.

Mathematics

The importance of mathematics to the college-bound student cannot be overstated. It is, as the College Board of New York states in *Academic Preparation for College*, the "indispensable language of science and technology . . . business and finance." Those students who have a strong preparation in mathematics will have an intellectual edge in our high tech information age. They will have a wider range of college choices.

College entrants need more than basic mathematics preparation. These students should have at least three years of high school mathematics, including algebra and geometry. Students interested in careers in business, agriculture, natural sciences, engineering, mining, mathematics, computer science, medical sciences or architecture should take four years mathematics that will develop more extensive knowledge and skills.

Minimum preparation in mathematics includes competence in each of the following areas:

- Computation with whole numbers, rational numbers, and integers in standard or scientific notation, and common radicals; knowledge of order of operations and use of grouping symbols.
- Properties of the real number system and the meaning of operations defined on real numbers.
- Use of mathematical symbols for variables including single and double subscripted variables, functions, relations, and operations.
- Algebraic manipulations of linear and polynominal equations and inequalities, rational expressions, and absolute values.
- Coordinate graphing of linear and quadratic functions and relations.
- Measurement, including estimation, direct and indirect measurement, and derived units of measure.
- Fundamental properties of geometric figures in two and three dimensions, and relationships among geometric figures.
- Exponents and exponential and logarithmic functions.
- The nature of axiomatic systems and mathematical proof.
- Use of mathematical relationships and methods to solve problems.

Science

The College Board 1983 Report states, "Science — the study of the natural world — is both useful and rewarding in its own right. It provides a sense of the order in the universe and is one of civilization's major intellectual achievements. It is fueled by the same creativity required for art, music, or literature. It relies on curiosity, objectivity, and healthy skepticism. The study of science, then, is excellent preparation for college regardless of students' intended field of concentration."

As well as developing important skills, the study of science prepares students to understand social and technological issues such as nuclear power, genetic engineering, or robotics. In a society that relies more and more on science and technology, students must have a strong, basic understanding of science to function effectively. Students planning careers in agriculture, biology, chemistry, physics, mining, engineering, or medical sciences should additionally take advanced science classes in their areas of interest.

Preparation in the sciences should provide:

- Understanding of the diversity of natural phenomena and the methods of studying and classifying them.
- Recognition of the interrelationships and interdependence of living organisms, and the role of a biological organism in a physical world.
- Understanding of the scientific method of investigation and the role of observation and experimentation in the advancement of knowledge.

- Experience in gathering scientific data through laboratory and field work.
- Ability to construct tables and graphs from given data, and to interpret data presented in tables and graphs.
- Ability to draw conclusions and inferences from data.
- Ability to communicate observations and experimental results both quantitatively, through use of mathematical relationships, and qualitatively, in clear and concise spoken or written language.
- Appreciation of the unifying concepts and principles within the Natural Sciences.
- Awareness of the philosophical, ethical, political, and economic impacts of science and technology.
- Awareness of concerns about the current and future impacts of science and technology on society.

Courses in the science curriculum should include the basic concepts, principles, and factual information in the following areas:

Biology:

- Molecular and cellular biology
- Genetics
- Plant and animal diversity and the principles of classification
- Structure and function of plants and animals
- Population biology
- Organic evolution
- Ecology
- Animal behavior

Chemistry:

- Structure of matter
- States of matter
- Reactions of matter (acids, bases, oxidation — reduction, electro-chemistry, equilibrium, kinetics, thermodynamics)
- Chemical classification
- Introductory organic chemistry

Physics:

- Principles of mechanics
- Laws of conservation
- Basics of waves
- Fundamentals of electricity and magnetism
- Atomic and nuclear physics

Social Studies

The social studies have a set of complex and overlapping systems — social economic, political, and cultural. A unique combination of these systems forms our society. To prepare for roles as responsible citizens, students must know how modern societies function, and how these societies evolved. Through social studies, students gain knowledge and an awareness of our own society and of those past, and they gain analytical skills important for college success. Social studies can help students place the arts and sciences in context, and provide a foundation for advanced work in history, anthropology, economics, geography, political science, psychology, and sociology.

Preparation in world history and geography should provide:

- Knowledge of major contemporary societies and cultures and their geography.
- Knowledge of the chronology and significance of major events and movements in world history.
- Knowledge of major contemporary trends, such as nationalism and urbanism.

Preparation in United States history should provide:

- Knowledge of relationships between events and historical movements in the United States and in the world.
- Understanding of the interactions among people of different national origins, races, cultures, and how such interaction has shaped American history.
- Knowledge of the major political and economic institutions and their historical development.
- Knowledge of the social and cultural fields of history.

Course work in economics should provide:

- Knowledge of the free enterprise system and of competing philosophies.
- Knowledge of effective consumer economics and personal financial planning.

Government and law studies should provide:

- Knowledge of the roles of municipal, state, and federal governments and the duties of citizenship.
- Knowledge of America's major political institutions and philosophies, and of the Constitution and branches of government.

Foreign Language

College-bound students should take at least two years of the same foreign language. The study of languages helps to prepare a student for more successful university work by providing a clearer understanding of the structure and power of one's own language. Such study improves sensitivity to other cultures and other ways of thinking and verbalizing ideas, and enhances access to more information in every academic and professional field.

A student should develop the following skills in at least one second language:

- Aural comprehension, i.e., the ability to understand and transcribe correctly spoken or dictated passage.
- Ability to read prose passages, at least with the aid of a dictionary.
- Ability to conduct a conversation with correct pronunciation and intonation.
- Grasp of basic conversational idioms.
- Ability to compose a paragraph with correct spelling and punctuation.
- Possession of a functional vocabulary for travel and social encounters, or for study in a particular academic or professional field.
- Some knowledge of, and sensitivity to, other aspects of a foreign country besides the language and literature such as climate and geography, history, music, art, theatre cultural traditions, social and religious conventions, industry and economy, politics and the legal system, and prominent personalities.
- Ability to cite areas of similarity and contrast between English and the second language.

These skills can be acquired in one or more of the following ways:

- At least two, and preferably three or four years of classroom study.
- Living with a bilingual family.
- An extended visit to another country with daily practice in speaking, reading and writing the foreign language.
- Study at foreign language "villages" and institutes in the United States.

Fine Arts

The fine arts provide a necessary balance, especially in this age of high technology. They celebrate humanity. They are the means by which we can express our unique experiences, our innermost thoughts, and our intimate feelings. They provide both creative insights and responses, for our own society and for other societies, and for other times.

Participation in the visual or performing arts leads to more imaginative, flexible ways of thinking and of seeing; it builds self-confidence and self-discipline.

Appreciation of the arts is an important part of the study of history, social sciences, and language arts. Students should be exposed to these areas so their cultural backgrounds develop as their academic skills grow. Appropriate references to the arts should be incorporated in all curricular areas.

Preparation in the arts should provide:

- Understanding and appreciation of the unique qualities of each of the arts.
- Appreciation of how people from various cultures have used the arts to express themselves.
- Understanding and appreciation of different artistic styles and works from representative historical periods and cultures.

- Some knowledge of the social and intellectual influences affecting artisitic form.
- The ability to use the skills, media, tools, and processes required to express oneself in one or more of the arts.
- Use of community resources related to the arts whenever possible.

Computer Education

Students entering college need to know how to use computers. This may be accomplished in a computer education class or as a part of a learning experience in another setting. Computer education should allow the student to:

- Understand the essential functions of a computer and the principles on which it operates.
- Recognize the basic purposes of major hardware and software elements.
- Use computers as basic tools for problem solving, finding information, and organizing.
- Understand computer terminology and how to use computers for such tasks as word processing, number processing, and self-instruction.
- Understand both social and economic implications of computer technology.
- Recognize the need to develop and evaluate ethics related to computer use.

II.

General Competencies for College

Students should develop a number of general skills that are essential for successful college study. These general competencies supplement the mastery of more specific subject matter as detailed in Section II: English, mathematics, science, social studies, foreign language, fine arts, and computer education. Such skills are not the province of any particular subject area, but are found throughout the standard disciplines of knowledge and serve as critical links to all learning. Students who possess these general competencies demonstrate that they have the basic tools for learning and are most likely to have a successful college career. The following list of general competencies reflects the recommendations of a number of national educational and professional associations. Entering college freshmen should have:

In **organizing, study, and research,** the ability to

- Set study goals and priorities consistent with stated course objectives and one's own progress.
- Take thorough, well-organized lecture notes.
- Manage study time to meet deadlines.
- Follow instructions accurately.
- Know how to prepare for and take a variety of tests.
- Develop memory skills.
- Accept and learn from constructive criticism.
- Synthesize knowledge and apply it to new situations.
- Use libraries effectively and efficiently.
- Use a typewriter and word processor.

In **reading,** the ability to

- Identify and comprehend the main and subordinate ideas in a written work and summarize the ideas in one's own words.
- Recognize different purposes and methods of writing, identify a writer's point of view and tone, and interpret implied as well as literal meanings.
- Separate one's personal opinions and assumptions from those of a writer.
- Vary reading speed and method including survey, skim, review, question, and master, according to the type of material and one's purpose of reading.
- Use the features of books and other reference materials such as the table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, and bibliography.
- Define unfamiliar words by using contextual clues or by using a dictionary.
- Understand the differences between denotation and connotation, abstract and concrete, literal and figurative expression.

In **writing,** the ability to

- Use the processes of pre-writing, writing, and rewriting.
- Identify or generate ideas for topics.
- Organize, select, and relate ideas pertinent to a topic.

- Outline identified ideas and develop them into coherent paragraphs.
- Organize paragraphs into a logical sequence so the central idea is developed to a logical conclusion.
- Write standard English sentences with correct sentence structure, grammar, spelling, punctuation, and capitalization.
- Vary writing style for different audiences and purposes.
- Use a variety of forms including essays, letters, poems, and journals.
- Read one's own writing critically and correct errors.
- Present one's own ideas as separate from but related to the ideas of others, including the proper use of documentation.
- Support one's opinions and conclusions with appropriate use of evidence. Be able to quote, paraphrase, and summarize data.
- Use dictionaries and other reference materials for checking words as well as facts.

In **speaking and listening,** the ability to

- Participate critically and constructively in the exchange of ideas,
- Ask and answer questions coherently and concisely.
- Follow instructions.
- Identify and comprehend the main ideas in lectures and discussions and report accurately what others have said.
- Identify and develop ideas about a topic for the purpose of speaking to a group, choose and organize related ideas, present them clearly in standard English, and evaluate similar presentations by others.
- Use words, pronunciation, and grammar appropriate to the audience, situation and purpose.
- Evaluate a speaker's intent as compared with content, and recognize non-verbal cues.

In dealing with **quantitative and spatial concepts,** the ability to

- Perform arithmetic operations accurately including addition, subtraction, multiplication, and division using rational numbers, fractions, decimals, and integers.
- Use measurements in both standard and metric units.
- Understand and use ratios, proportions, percentages, roots and powers, algebra, and geometry to formulate and solve problems in everyday situations.
- Select and use appropriate approaches and the tools of mental computation, paper-and-pencil techniques, calculator, computer in solving problems.
- Determine the reasonableness of results through estimation and approximation.
- Understand the language and notation of mathematics, formulate problems into mathematical statements using algebraic language, and express quantitative ideas with precision.

In **reasoning and investigation,** the ability to

- Draw logical conclusions from written and oral sources as well as from observation of natural events.

- Defend one's own conclusions logically.
- Identify and formulate problems; propose and evaluate ways to solve them.
- Recognize and use inductive and deductive reasoning.
- Recognize major fallacies in reasoning.
- Comprehend, develop, and apply concepts and generalizations within and between subject areas.
- Distinguish between fact and opinion.
- Solve problems where method of solution is not recommended by the teacher or the textbook.

Notes to Students

- Make a commitment to your future **right now!** Develop a four-year plan to make high school count.
- Consult your counselor for career, aptitude and interest inventories that may be available to help you better understand yourself.
- Avail yourself of every opportunity to learn about careers by volunteer work, attending career fairs and interviewing persons in fields that interest you.
- If you have chosen a career, work with your counselor and consult the catalogs from colleges and universities that offer the program you want. Some colleges may require additional course work and competencies for entrance, so be sure to check.
- Develop study skills early in high school to assist with the learning of all subject areas.

Notes to Parents

- Get involved; help plan your student's four-year academic program so that options for college and careers can be kept open.
- Communicate with the teachers and administrators.
- Show an interest in your student's curriculum and progress; encourage and help with homework.
- Set aside a quiet place and time for completing homework.
- Encourage your student to participate in a wide variety of activities, including student government, school clubs, high school publications, community service, work, and travel.
- Provide exposure to visual and performing arts through trips to museums, concerts, and the theatre.
- Explore higher education possibilities including visits to college campuses.

Notes to Local School Districts

All districts should

- Implement a program of early identification of college bound students. Enter into a four-year contract with parents and students designed for the college-bound student.
- Assure time in each student's schedule for career and academic counseling.
- Raise expectations: teachers and administrators need to demand more of their students and to maintain high standards.
- Encourage communication between teachers, administrators, and parents.
- Communicate the value of education to students and encourage an atmosphere of academic curiosity.
- Provide students with career information in their field of interest.
- Override historical stereotyping; direct advisement for college education should be provided all students of ability. For students lacking skills in the English language, provide special counseling.
- When possible, offer advanced placement classes for college bound.
- Examine the district's curriculum, comparing it to the recommendations outlined in this report and make appropriate changes.

Notes to the State Board of Education

- Expand communications between high schools and institutions of higher education regarding college expectations and standards. This should include organizing forums between high school and college faculties in each discipline.

- Provide statewide workshops and conferences for college-bound students, parents, teachers, and administrators, to cover college programs available and college expectations.

- Examine the high school course of study to assure students have access to academic programs consistent with this report.

Notes to the Board of Regents

- Study admission standards at the State Universities. Set entrance requirements which are generally consistent with this report.
- Ask each department within the universities to identify the minimal competencies expected of a student in order to satisfactorily complete the work of that department.
- Assure that adequate lead time be allowed before any requirements are changed.
- Report back to high schools on the first year academic performance of their former students. Encourage the development of profiles of successful and unsuccessful students.
- Encourage faculty in higher education, as a part of their community service, to visit high schools in their area to provide technical assistance in specific subject areas and consult with teachers, students, and administrators about curricular matters which affect college performance.

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